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Spotbilled Pelicans and Painted Storks at Kokre Bellur - An Update

S. SRIDHAR, Regional Co-ordinator, AWC and

A.K. CHAKRAVARTHY, Entomologist, U.A.S., GKV, Bangalore

One first glimpse of nesting pelicans and storks in the trees amidst the houses in Kokre Bellur village is an unforgettable experience by itself. We have been monitoring the population of the spotbilled pelicans (*pelecanus philippensis*) and painted storks (*Mycteria leucocephala*) for well over a decade now. This village provides a unique case study of co-existence of wildbirds with humans.

The routine here is more or less established with the pelicans beginning to nest in November and the painted storks following suit in January. Only the imperative of another generation beckons them to this heronry.

When we visited the heronry in March, the village was resounding with raucous begging calls of pelican chicks. While some storks were busy with their courtship, bill rubbing and mounting, others were busy with their respective tasks of incubation, egg turning, wing shading, feeding, bringing tender or dry twigs of *Ocimum*, *Acacia* and *Thespesia* to strengthen the nest structure, landing and take off flights, and balling up in the sky with the thermals.

End of March marked nesting of pelicans near to a close while the nesting activities of storks were at the peak. A total of 212 nests of storks and 11 of pelicans could be counted. Mr. Manu of Mysore Naturalists Association, who is camping here since January, informed us that the nesting of pelicans commenced on 28th October 1994 and that of storks in mid January 1995.

Our counts revealed the numbers of storks to range between 850 and 900 and that of pelicans between 300 and 350. In the evening, twelve black ibis (*Pseudibis papillosa*) and about 450 to 500 white ibis (*Threskiornis melanocephala*) were seen arriving in small flocks to roost at Kokre Bellur.

The trees holding nests of pelicans and storks included *Ficus balerica*, *Thespesia populnea*, *Delonix allata*, *Tamarindus indica*, *Melia dubia*, *Albizia lebek*, *Azadirachta indica* and *Ficus bengalensis*. On four trees the nests of both species could be sighted. In other trees, only nests of storks could be found. The aggregation of nests appeared to follow the aggregation pattern of trees. About eighty percent of nests sighted in 1995 were clustered adjacent to houses in the village. Although there were a number of trees suitable for nesting in the outskirts of the village, the birds preferred to nest in the trees within the village itself. This indicates that the presence of humans accrue a sense of security to the nesting storks and pelicans.

But all nesting attempts were not successful. Some branches holding the nests were too slim and offered only rudimentary support. The chicks fall from such nests either due to the gusty winds or while stretching out to receive food from their parents. Prior to 1995, such unlucky chicks were either sent to Mysore Zoo or Bannerghatta National Park, Bangalore for rehabilitation. But many of the grounded chicks used to die due to starvation or were preyed upon by stray dogs and cats. Then the chick mortality was high. This year, in

the common village land in about 250 M², the officials of forest department under the able guidance of Mr. A.N. Yellappa Reddy, the special secretary to govt., dept. of ecology and environment, have created an open-air enclosure to nurse and rear the chicks.

At the enclosure, rivulets of sweat ran down Manu's forehead as he carefully fixed coloured bands to the foot of a pelican; an intense bird with imploring brown eyes, it gazed our way with an alarmed assumption.

The forest department has also arranged to supply fish to the chicks. While 5 to 10 days old chicks required 500 grams of fish per day the older chicks required about one kilo each. Fourteen pelican chicks and three stork chicks were being reared as on 25th March 1995. During our fourth visit in April, we noticed that only four pelican chicks remained at the enclosure, three were returning now and then to the enclosure for food, three had become self reliant, and the whereabouts of the other eight pelicans successfully reared and released after fixing colour bands, will be known by November.

Thus from October 1994 to April 1995, 14 pelican chicks were successfully reared to fledglings. By April end the team headed by Manu was also rearing 18 painted stork chicks, which had fallen from their respective nests. The forest department officials have decided to make a permanent enclosure here for feeding and protecting the chicks till they became self reliant.

Seldom has a bird exercised such a profound influence on a village which is protecting the colony in a wonderful way. Later, as we walked down the country path, we stopped to watch a juvenile pelican staging its majestic early morning sorties, repeatedly from a vantage point of a tree. The colony has survived for centuries and perhaps the village's remoteness has kept the birds from being wiped out.

It is the strangeness of these creatures breeding in their village, possibly nowhere else in our country, can we see such a co-existence of man and wildbirds, which merits an ecologist's sincere respect.

Common wisdom holds in the village that the arrival of birds and their commencement of nesting is a good omen. They are all proud of this heritage. The attitude of care, basic values, love and compassion for the birds is passed from generation to generation.

The pelicans have been observed to visit the lakes at Sulekere, Maddur, Bolare Koppalu, Gutlu Kere, Marchalli, Malavalli, Thailur and surrounding areas within 50 km², in search of fish and frogs. Altogether as many as 63 wetlands have been identified as the foraging habitats of pelicans. According to Manu and the forest guard, pelicans conduct five to six forays for bringing food to their chicks. Some forays are also made during night.

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Editorial

Threatened Birds of Asia

Birdlife International & SACON organised a meeting in Coimbatore between 3rd and 8th February, to discuss the publication of a Red Data Book on birds of Asia. This meeting concentrated on the birds of the South Asian Region. SACON will, I am sure, produce a detailed report in due course which will be summarised in our Newsletter.

What interested me was the WORKSHEET FOR REVIEW OF THE CANDIDATE LIST. It is necessary to decide whether a bird is to be on the VULNERABLE list or the THREATENED list. There were 110 species on the list of threatened birds and I was surprised that the following were included — Malabar grey hornbill, Malabar crested lark, black and rufous flycatcher and several others which are commonly seen. The criteria for determining the VULNERABLE CATEGORY are : rapid decline; small range; small population. Those of our readers who are in a position to contribute to this exercise should write to SACON (Salim Ali Centre for Ornithology and Natural History), KALAMPALAYAM, COIMBATORE 641 010, and ask for the Species Data Form, and Locality Data Form.

Canaries to the Rescue

We are aware of the fact that canaries have been used in coal mines to detect the presence of carbon monoxide. Both the birds and humans succumb to the gas. Since the metabolism of birds is faster than that of humans, the birds die first, and noting this the humans have a chance to run away.

In the recent dreadful nerve gas attack in Tokyo's subway, more than 2500 Police wearing riot gear and special protective clothing, raided the suspected terrorist hide-out. A report in the Economic Times of March 22nd, says "officers carried canaries hoping that any toxic fumes would kill the birds first". I suppose, since we are at the apex of civilisation, it is logical to place the interest of people before canaries!

Ramsar Convention

Pursuant to the decisions taken in the recent meetings of the Standing Committee of the Ramsar Bureau held in Gland in 1993, and Budapest in 1994, it was decided to organise an Asian Regional Meeting of Contracting Parties of the Ramsar Convention in Delhi from 23-25th March 1995. I was invited to the meeting but the letter was posted to my former Kodaikanal address and reached me in Bangalore just a day before the meeting. So I could not go. I hope to report on the proceedings in a later issue. According to the Agenda there was a Working Group on Wise Use; and a second Working Group on International Cooperation. I hope the participants place special emphasis on the implementation of the "wise" decisions taken at the meeting.

Article from Pakistan

At the Coimbatore meeting referred to above, I had the pleasure of meeting Ashiq Ahmad, Conservation Director, WWF—Pakistan, UPO Box 1439, Peshawar, Pakistan. Whilst speaking to him about the problems of birds in his country, I said that we would welcome an article by him for our Newsletter. He said he would write one during the lunch break and proved to be as good as his word. The article is included in the current issue, and some of us should keep in touch with him and others in the Conservation Movement in Pakistan. The birds may act as good messengers of peace.

Some Observations on the Ground Nesting Birds at the Adyar Estuary, Madras



V SANTHARAM, 68, 1 Floor, Santhome High Road, Madras 600 028
(Present address: SACON, Kalampalayam, Coimbatore 641 010)

This note is based on the field observations conducted between the years 1979-1981, during my college vacations. Part of these observations were published earlier (Santharam, 1980). Subsequently, the original notes were misplaced and were re-discovered recently.

The study was conducted at the open meadow adjoining the M.R.C. Nagar, on the northern banks of the Adyar Estuary, some 15-20 ha in areal extent. Much of the meadow was covered with grass and had a few scattered *Calotropis* and *Prosopis* bushes. There was moderate disturbance from cattle grazers, fishermen and residents from nearby houses. The housing colony expanded gradually and the meadow was subjected to severe disturbances. At present, the main study area has become a regular school play-ground and though a few of the ground-nesters are still present, their survival is threatened by the disturbances caused by people and the loss of open areas in the neighbourhood.

In the course of the three years of observations, we came across 68 nests of ground-nesting birds. The break-up is given in Table 1. In this note, I present the results of observations on the breeding biology of the yellow wattled lapwing, blackbellied finch-lark and rufouswinged bushlark (wrongly referred to as redwinged bushlark in the earlier note).

TABLE 1

Number of nests seen at the Adyar meadow (1979-1981)

Species		# of Nests
Yellow-wattled lapwing	<i>Vanellus malabaricus</i>	— 25
Redwattled lapwing	<i>V. indicus</i>	— 1
Stone curlew	<i>Burhinus oedipnemos</i>	— 2
Blackbellied finch-lark	<i>Eremopterix grisea</i>	— 35
Rufouswinged bushlark	<i>Mirafra assamica</i>	— 5

Adult birds were followed in the breeding season using a 10 x 50 binoculars and nests located from their behaviour and movements. Nests were also located while crossing the open meadow. All nests were assigned a serial number and separate cards were maintained for each nest where details were noted on every visit. Visits were made almost daily, both in the mornings and late afternoons. This study yielded some first-hand information on the breeding biology of these species such as nest mortality rates, incubation and fledging periods.

Yellow-wattled lapwing

Nests were located between late March and August. The eggs were laid on the bare ground in a small scrape, surrounded by pebbles, twigs, pieces of dry cowdung and sea shells. The clutch size of four was common: 16 (64%) of the nests had 4 eggs; 3 (12%) had three eggs and the rest had two or, at times, a single egg. These were perhaps abandoned or unhatched eggs.

Eggs were laid at intervals of over 24 hours and in one case (Nest 1/1981), the fourth egg appeared at least three days after the third was laid. Incubation commences soon after the first egg is laid as indicated by the asynchronous hatching of eggs. Incubation period determined from a single nest was 27 days where the last egg was laid on the May 25 and the last egg hatched on June 22. As most nests were discovered after the clutch was complete and also due to heavy egg mortality, this could not be verified by more observations. However, this is in agreement with the incubation period of 28-30 days for the larger redwattled lapwing (Ali and Ripley, 1983).

As mentioned earlier, the eggs hatched asynchronously. At nest 4/1980 (three eggs), the first chick hatched out at 06.20 hr on May 31, while the second young was out when the nest was visited at 15.30 hr the same evening. The third egg hatched the next day (June 1), sometime between 08.00 and 15.40 hr. The process of hatching takes 38-63 hours after the first cracks were noticed. The calls of the young chick can be heard from within the eggs as they commence the hatching process.

The chick that emerges from the egg is wet and the eyes remain closed. But soon the chick is dry and the eyes are open. In about an hours' time, the chick is able to walk and is led away from the nest by its parents. However, they remain close to the nest site till all the eggs hatch. The young birds blend well with their surroundings and crouch on the ground when approached or threatened.

Though the parent birds defend their nests and have distraction displays during the incubation stage, they tend to be more aggressive after the chicks emerge. They often attack anyone who ventures too close to the chicks or handles them. Accompanied by their loud calls, birds "dive-bomb", scraping past one's head and missing it within inches if their distraction (broken-leg) displays do not yield results.

Calculating the nesting success from the sample of 25 nests, I found that in ten nests at least one of the eggs hatched, accounting for 40% success. This rate was not consistent between the years and year-wise success rate ranged from 27.3% in 1981 to 62.5% in 1980.

Mortality of eggs could be attributed to predation (by birds, reptiles, dogs or human) and to accidental trampling of eggs by cattle or human. In a few cases, unhatched (addled?) eggs were found lying in the nest, probably abandoned.

Blackbellied finch-lark

This species appears to have a long breeding season. At Adyar Estuary, I have seen nests between the months of March and August. Elsewhere in Madras, I have seen nests with eggs as early as January 30 (1983) at Manali (ca. 15 km north of Adyar Estuary) and as late as September 1 (1981) at Velacherry (ca. 10 km south of Adyar).

The nests were placed in shallow depressions measuring 5-6 cm across and lined with grass and soft fibres from *Calotropis* shrubs. The nests were usually placed under small plants. For instance, in 1980, out of the fourteen nests located, only two (14.3%) were fully exposed. The rest were placed under shrubs or even dry twigs.

The clutch size of two was most common — 29 nests (82.3%) — and only once a nest with 3 eggs was seen. Eggs were laid on consecutive mornings (24-hr gap) at the Nest 10/1980. Incubation period was determined as nine days (Nest 5/1981). Both sexes participated in incubation. Eggs hatched on the same day, within a few hours of each other (Nest 6/1980). The chicks hatch naked and blind. Eyes are open on the third or fourth day. The chicks grow rapidly and leave the nest in just ten days' time, though they may return to the nest and remain for a day or two more after they first venture out of their nest. They are capable of flying short distances four to five days after they leave the nest (i.e. within two weeks of hatching).

While at nest, adult birds' visits to nests were monitored at two nests in 1980, to determine the feeding rates by parents and the role of the two sexes in feeding the young. Nest 3 was monitored for a total of 590 minutes (mornings and afternoons) while Nest 6 was monitored for 630 minutes (afternoons only). The rate of visits to the nest with food by the parent birds varied from once in 3.3 minutes to 6.9 minutes at Nest 3 and at Nest 6, it ranged from once in 4.3 minutes to 15 minutes. No clear trend in changes in feeding rates with the growth of the chicks was evident from the data. At both the nests, it was the female that took greater part in feeding the young (72.9% and 73.7% of the visits). The male was hesitant in approaching the nest and often moved around with food in its beak while the female showed no hesitation at approaching the nest. Both the sexes attended

to the nest sanitation and removed faecal sacs (which were sometimes consumed by the adult birds) and also in chasing out other birds that came close to the nest.

The overall success rate of the finch-lark nests (in raising at least one young from a nest) was 37.1% and the rate of nest mortality was at least 60%. Across the years, the success rate varied from 28.6% to 50%. Predation of nests occurred at the egg stage. Of the unsuccessful nests, only one (4.8%) was predated after the eggs had hatched.

Rufouswinged bushlark

Compared to the finch-lark, the bushlarks appear to have a more restricted breeding season. Nests were seen between March and July. This may be due to the smaller sample size.

Unlike the finch-lark nests, nests of the bushlark were slightly larger and were invariably covered by a dome. The whole structure is made up of fine twigs and dry grass. At one of the nests, the dome construction was completed in two days' time.

The clutch size was three in 1979 and 1981 (3 nests) while it was two in 1980 (2 nests). One egg each was laid on three consecutive days at Nest 1/1981. The incubation period calculated at the same nest was 13 days. The eggs hatch within a few hours of one another. The young ones are naked and blind when hatched and eyes open within four days. The period of fledging is at least 12 days. The young may return for a day or two after venturing out of the nest.

The nesting success was highest in the bushlark in comparison with the two other ground nesting species studied. Only one of the five nests was lost (chicks trampled upon by cattle?) leading to a high success rate of 80%. This may, in part, be attributed to the protection and concealment afforded to the eggs and chicks by the dome.

Acknowledgements

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A Preliminary Avifaunal Survey in and Around Bijnor, Uttar Pradesh

MOHD. KHALID SAYEED PASHA, Centre of Wildlife & Ornithology, Aligarh Muslim University, Aligarh 202 002 (UP)

Bijnor town (29° 22' N and 78° 8' E, alt 220.5 msl) is the headquarter of the district and Tahsil of the same name, situated 150 km South West of Delhi.

About 10 km on the western side flows the Ganges and the northern portion the Malin River, a tributary of Ganges. Proximity to the Himalayas renders the climate of Bijnor cool

and pleasant. June is the hottest month with monthly average temperature 38°C and December-January being the coldest with a minimum monthly average temperature of 5°C. The average annual rainfall is about 1200 mm.

The town on its fringes is circled by fine groves of mango. Areas lying near the Ganges are mainly under cultivation, and there also exist some patches of grassland (dominated by *Imperata cylindrica* and *Typha* species) and scrubland, 'reserved' under the Forest Act. Common tree species of the area being *Bombax ceiba*, *Prosopis*, *Ficus*, *Azadiracta indica*, *Mangifera indica*, *Dalbergia sissoo*, *Eugenia jambolana* and *Psidium guajava*.

Patches of plantation (*Dalbergia sissoo*, *Populus* spp. and *Eucalyptus* spp.) occur on the western side of the town governed by the Social Forestry Division of the district. Plantation patches some privately owned, occur interspersed with cultivation fields throughout the area.

Due to such diverse characteristics in the flora and physical aspects the area has a very diverse avifauna. The present study is the outcome of the short avifaunal surveys carried out between October and December 1994, mainly confining to the Mango groves, the Khadar and banaghar areas of Ganges, plantation, nearby wetlands and the Ganges itself. A total of 140 species were observed of which 26 are migrant. Prior to this no such study has been carried out and neither any such documentation of the avifauna exists.

On the western bank of Ganges a breeding colony of Indian river tern (*Sterna aurantia*) along with eight individuals of blackbellied tern (*Sterna acuticauda*) were sighted. Of great interest is the sighting of two great crested grebe (*Podiceps cristatus*) in a small wetland in Dharamnagari village 4 km West of Bijnor. Since this species of grebe migrates in small numbers only to some parts of northern India, this record is of considerable significance. These grebes were seen feeding on submergent vegetation and actively diving and surfacing in the wetland. Among the raptors white-eyed buzzard eagle (*Buteo teesa*) requires a special mention of which twelve individuals were sighted on the western bank of the River Ganges on 28 November, 1994, in a stretch of about 2 km.

Small islands in the Ganges attract many waders (sandpipers, plovers and avocets). On one such island all the four species of gulls listed in the checklist were observed. Alongwith the common residents the orchards are an abode to species like greyheaded flycatcher (*Culicicapa ceylonensis*), whitebrowed fantail flycatcher (*Rhipidura aureola*), blackheaded oriole (*Oriolus xanthornus*) and scarlet minivet (*Pericrocotus flammeus*). Among the members of anatidae, pintail (*Anas acuta*), ruddy shelduck (*Tadorna ferruginea*), greylag goose (*Anser anser*) were quite common, while tufted duck (*Aythya fuligula*) was seen on two occasions.

The area also has a small population (five individuals) of swamp deer (*Cervus duvauceli*), a Schedule (I) species, which is the last surviving population in the area and needs immediate attention. One of the great things of concern is the illegal felling of trees from the reserved forest. Clearing of scrub patches, encroachment of wetlands for agricultural purposes and cultivation of water chestnut *Trapa natans* as well as illegal harvesting of turtles are important management problems of the area and pose a great threat to the wildlife.

As most of the wetlands are privately owned, no direct conservation measures can be taken. The local government bodies in collaboration with non-government organisation and local community should chalk out a strategy to protect these few remaining patches of forest and the wildlife therein.

Checklist of the Birds in and around Bijnor, (U.P.)

S.no.	Common Name	Scientific Name	Status
Family : Podicipedidae			
1	Great crested grebe	<i>Podiceps cristatus</i>	M
2	Little grebe	<i>Podiceps ruficollis</i>	R
Family : Phalacrocoracidae			
3	Little cormorant	<i>Phalacrocorax niger</i>	RM
4	Darter	<i>Anhinga rufa</i>	RM
Family : Ardeidae			
5	Grey heron	<i>Ardea cinerea</i>	RM
6	Purple heron	<i>Ardea purpurea</i>	RM
7	Pond heron	<i>Ardea grayii</i>	R
8	Cattle egret	<i>Bubulcus ibis</i>	RM
9	Large egret	<i>Ardea alba</i>	RM
10	Smaller egret	<i>Egretta intermedia</i>	RM
11	Little egret	<i>Egretta garzetta</i>	R
Family : Ciconiidae			
12	Painted stork	<i>Mycteria leucocephala</i>	R
13	Openbill stork	<i>Anastomus oscitans</i>	R
Family : Threskiornithidae			
14	White ibis	<i>Threskiornis aethiopica</i>	RM
Family : Anatidae			
15	Greylag goose	<i>Anser anser</i>	M
16	Barheaded goose	<i>Anser indicus</i>	M
17	Ruddy shelduck	<i>Tadorna ferruginea</i>	M
18	Pintail	<i>Anas acuta</i>	M
19	Common teal	<i>Anas crecca</i>	M
20	Shoveller	<i>Anas clypeata</i>	M
21	Redcrested pochard	<i>Netta rufina</i>	M
22	Common pochard	<i>Aythya ferina</i>	M
23	White-eyed pochard	<i>Aythya nyroca</i>	M
24	Tufted duck	<i>Aythya fuligula</i>	M
25	Cotton teal	<i>Nettapus coromandelianus</i>	R
26	Comb duck	<i>Sarkidiornis melanotos</i>	R
27	Common merganser	<i>Mergus merganser</i>	M

Family : Accipitridae

28	Blackwinged kite	<i>Elanus caeruleus</i>	R
29	Honey buzzard	<i>Pemis ptilorhynchus</i>	RM
30	Pariah kite	<i>Milvus migrans</i>	R
31	Shikra	<i>Accipiter badius</i>	R
32	Sparrow-hawk	<i>Accipiter nisus</i>	M
33	White-eyed buzzard-eagle	<i>Butastur teesa</i>	R
34	Greater spotted eagle	<i>Aquila clanga</i>	RM
35	Lesser spotted eagle	<i>Aquila pomarina</i>	R
36	Indian whitebacked vulture	<i>Gyps bengalensis</i>	R
37	Egyptian vulture	<i>Neophron percnopterus</i>	RM
38	Marsh harrier	<i>Circus aeruginosus</i>	M
39	Crested serpent eagle	<i>Spilornis cheela</i>	R

Family : Phasianidae

40	Black partridge	<i>Francolinus francolinus</i>	R
41	Grey partridge	<i>Francolinus pondicerianus</i>	R
42	Jungle bush quail	<i>Perdica asiatica</i>	R
43	Common peafowl	<i>Pavo cristatus</i>	R

Family : Gruidae

44	Sarus crane	<i>Grus antigone</i>	R
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Family : Rallidae

45	Whitebreasted waterhen	<i>Amauromis phoenicurus</i>	R
46	Purple moorhen	<i>Porphyrio porphyrio</i>	R
47	Coot	<i>Fulica atra</i>	RM

Family : Jacanidae

48	Pheasant-tailed jacana	<i>Hydrophasianus chirurgus</i>	R
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Family : Recurvirostridae

49	Blackwinged stilt	<i>Himantopus himantopus</i>	R
50	Avocet	<i>Recurvirostra avosetta</i>	RM

Family : Burhinidae

51	Stone curlew	<i>Burhinus cedionemus</i>	R
52	Great stone plover	<i>Esacus magnirostris</i>	R

Family : Charadriidae

53	Redwattled lapwing	<i>Vanellus indicus</i>	R
54	Spurwinged lapwing	<i>Vanellus spinosus</i>	R
55	Little ringed plover	<i>Charadrius dubius</i>	RM
56	Redshank	<i>Tringa totanus</i>	RM
57	Greenshank	<i>Tringa nebularia</i>	RM
58	Green sandpiper	<i>Tringa ochropus</i>	M
59	Common sandpiper	<i>Tringa hypoleucos</i>	RM
60	Little stint	<i>Calidris minuta</i>	M

Family : Laridae

61	Herring gull	<i>Larus argentatus</i>	M
62	Great blackheaded gull	<i>Larus ichthyaetus</i>	M
63	Brownheaded gull	<i>Larus brunnicephalus</i>	RM
64	Blackheaded gull	<i>Larus ridibundus</i>	M
65	Indian river tern	<i>Sterna aurantia</i>	R
66	Blackbellied tern	<i>Sterna acuticauda</i>	R

Family : Columbidae

67	Yellowlegged green pigeon	<i>Theron phoenicoptera</i>	R
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68	Blue rock pigeon	<i>Columba livia</i>	R
69	Turtle dove	<i>Streptopelia turtur</i>	V
70	Rufous turtle dove	<i>Streptopelia orientalis</i>	RM
71	Indian ring dove	<i>Streptopelia decaocto</i>	R
72	Spotted dove	<i>Streptopelia chinensis</i>	R
73	Little brown dove	<i>Streptopelia senegalensis</i>	R

Family : Psittacidae

74	Roseringed parakeet	<i>Psittacula krameri</i>	R
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Family : Culculidae

75	Pied crested cuckoo	<i>Clamator jacobinus</i>	RM
76	Common hawk-cuckoo	<i>Cuculus varius</i>	R
77	Koel	<i>Eudynamis scolopacea</i>	R
78	Crow-pheasant	<i>Centropus sinensis</i>	R

Family : Strigidae

79	Spotted owl	<i>Athene brama</i>	R
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Family : Apodidae

80	House swift	<i>Apus affinis</i>	RM
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Family : Alcedinidae

81	Lesser pied kingfisher	<i>Ceryle rudis</i>	R
82	Common kingfisher	<i>Alcedo atthis</i>	RM
83	Whitebreasted kingfisher	<i>Halcyon smymensis</i>	R

Family : Meropidae

84	Green bee-eater	<i>Merops orientalis</i>	R
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Family : Coraciidae

85	Indian roller	<i>Coracias benghalensis</i>	R
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Family : Upupidae

86	Hoopoe	<i>Upupa epops</i>	RM
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Family : Bucerotidae

87	Common grey hornbill	<i>Tockus birostris</i>	R
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Family : Capitonidae

88	Large green barbet	<i>Megalaima zeylanica</i>	R
89	Crimsonbreasted barbet	<i>Megalaima haemacephala</i>	R

Family : Picidae

90	Lesser goldenbacked woodpecker	<i>Dinopium benghalenses</i>	R
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Family : Alaudidae

91	Ashycrowned finch-lark	<i>Eremopterix grisea</i>	R
92	Crested lark	<i>Gelerida cristata</i>	R

Family : Hirundinidae

93	Swallow	<i>Hirundo rustica</i>	RM
94	Wiretailed swallow	<i>Hirundo smithii</i>	RM
95	House martin	<i>Delichon urbica</i>	RM

Family : Laniidae

96	Grey shrike	<i>Lanius exubitor</i>	RM
97	Rufousbacked shrike	<i>Lanius schach</i>	R

Family : Oriolidae

98	Blackheaded Oriole	<i>Oriolus xanthomus</i>	R
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Family : Dicruridae

99	Black drongo	<i>Dicrurus adsimilis</i>	R
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Family : Sturnidae

100	Brahminy myna	<i>Sturnus pagodarum</i>	R
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101 Rosy pastor	<i>Sturnus roseus</i>	M	Subfamily : Turdinae		
102 Pied myna	<i>Sturnus contra</i>	R	123 Magpie-robin	<i>Copsychus saularis</i>	R
103 Common myna	<i>Acridotheres tristis</i>	R	124 Brown rock chat	<i>Cercomela fusca</i>	R
104 Bank myna	<i>Acridotheres ginginianus</i>	R	125 Pied bush chat	<i>Saxicola caprata</i>	R
Family : Corvidae			126 Indian robin	<i>Saxicoloides fulicata</i>	R
105 Indian tree pie	<i>Dendrocitta vagabunda</i>	R	Family : Motacillidae		
106 House crow	<i>Corvus splendens</i>	R	127 Paddyfield pipit	<i>Anthus novaeseelandiae</i>	R
107 Jungle crow	<i>Corvus macrorhynchos</i>	R	128 Tawny pipit	<i>Anthus campestris</i>	M
Family : Campephagidae			129 Yellow wagtail	<i>Motacilla flava</i>	RM
108 Scarlet minivet	<i>Pericrocotus flammeus</i>	R	130 Yellowheaded wagtail	<i>Motacilla citreola</i>	M
109 Small minivet	<i>Pericrocotus cinnamomeus</i>	R	131 Grey wagtail	<i>Motacilla cinerea</i>	RM
Family : Pycnonotidae			132 White wagtail	<i>Motacilla alba</i>	M
110 Redvented bulbul	<i>Pycnonotus cafer</i>	R	133 Large pied wagtail	<i>Motacilla maderaspatensis</i>	R
Family : Muscicapidae			Family : Nectariniidae		
Subfamily : Timalinae			134 Purple sunbird	<i>Nectarinia asiatica</i>	R
111 Common babbler	<i>Turdoides caudatus</i>	R	Family : Ploceidae		
112 Large grey babbler	<i>Turdoides malcolmi</i>	R	Subfamily : Passerinae		
113 Jungle babbler	<i>Turdoides striatus</i>	R	135 House sparrow	<i>Passer domesticus</i>	R
Subfamily : Muscicapinae			Subfamily : Ploceinae		
114 Greyheaded flycatcher	<i>Culicicapa ceylonensis</i>	R	136 Baya	<i>Ploceus philippinus</i>	R
115 Whitebrowed fantail flycatcher	<i>Rhipidura aureola</i>	R	137 Streaked weaver bird	<i>Ploceus mantar</i>	R
Subfamily : Sylviinae			Subfamily : Estrildinae		
116 Ashy wren-warbler	<i>Prinia socialis</i>	R	138 Red munia	<i>Estrilda amandava</i>	R
117 Tailor bird	<i>Orthotomus sutorius</i>	R	139 White throated munia	<i>Lonchura striata</i>	R
118 Indian great reed warbler	<i>Acrocephalus stentoreus</i>	R	140 Spotted munia	<i>Lonchura punctulata</i>	R
119 Reed warbler	<i>Acrocephalus scirpaceus</i>	R			
120 Lesser whitethroat	<i>Sylvia curruca</i>	M			
121 Chiffchaff	<i>Phylloscopus collybita</i>	M			
122 Plain leaf warbler	<i>Phylloscopus niglectus</i>	M			

* Common merganser one male bird killed by poachers (29, Nov 1991).

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Some Approaches and Strategies to Protect Birds on Their Migratory Routes in the District of Chitral, Pakistan

ASHIQ AHMAD, Conservation Director, WWF-Pakistan, UPO Box 1439, Peshawar

Chitral, which is the northernmost district of North West Frontier Province, falls on the migratory route of several kinds of waterfowl and other water dependent birds and, also of thrushes and doves.

According to the WWF-Pakistan's studies, almost 800,000 ducks enter and leave Chitral during Spring and Autumn to reach their breeding and wintering grounds. Out of these, a minimum of 100,000 are shot down during Spring alone. Besides ducks, black throated thrushes and oriental turtle doves are also being hunted in enormous numbers, ranging from 50,000 to 200,000 in various years.

Hunting in Chitral is being considered and taken as a part of local culture and tradition. Accordingly, any effort in the past to stop such large scale killing of birds, rarely met with any success.

In order to be successful in minimizing the rate of hunting in Chitral, WWF-Pakistan adapted a strategy that was routed through the feelings and social structure of the local communities of Chitral. This was done through comprehensive fact finding missions, carried out in all important hunting areas of Chitral. The major findings were as follows :-

- 1 People were never approached in the past to educate them on the values and needs of conservation and seek their cooperation for protecting birds.
- 2 The majority of the hunters (70%) were involved in hunting because they had no other source of recreation.
- 3 About 25% hunters indicated that since they have no access to meat markets and they can't afford to buy it, they hunt birds.

Based on the above findings, WWF-Pakistan formulated the following approach:-

- Establish conservation clubs in as many local schools as possible.
- Establish links with all major hunters of the district; persuade them to form a Hunter's Association and help them to formulate bye-laws, rules and regulations for their Association which takes care of both the needs of hunters and conservation needs of target birds in question.
- Identify influential land owners and persuade them to declare a part, or whole of their land, as bird refuges.

- Explore the possibilities of establishing community poultry farms in meat deficient hunting areas through the involvement and participation of local communities.

Although the project is just two years old, it has been successful in achieving some of its targets in line with the proposed strategy. Some of these are as under:-

- 12 schools in hunting areas have 'nature clubs'.
- 9 landowners have declared their land as private bird refuges where hunting of all kinds is strictly prohibited.
- 64 hunters have joined the "Hunters' Association" with the rules and regulations being in progress for identification and formulation.
- Teenagers of an important village (from a hunting point of view) were given a 'cricket kit'. Teams like these will be subsequently organised as an "anti-hunting social groups".

Although it is hard to expect 100% control over hunting, the hunter's response to this approach is definitely positive and we expect to reduce bird hunting in Chitral by 25% (minimum) in the next two years.



Bird activity at Kuppadi, Wynad District, Kerala

K.G. RAGHU, Room 212, P.G. Hostel, Medical College Campus, Medical College PO, Trivandrum

Kuppadi (co-ordinates 11°45' N and 76° 15' E — Elevation app 800 mts) in Wynad District, Kerala, is a part of the Wynad Wildlife sanctuary. During a period of 5 years from 1990-1995, I could observe many interesting bird activities including these mentioned below.

Display of emerald dove (*Chalcophaps indica*)

On the clear morning of 11th January 1992, I heard the blowing call of emerald dove, while I was walking along a jungle path of Kuppadi forest. I had to search for some time before I could find the bird which was making the call. The bird a male emerald dove, was sitting on a wild mango tree at about a height of 10 mts. It was making 8-10 blowing calls at a stretch, like blowing into an empty bottle, before taking rest for about 50 secs and then making calls again.

While making these calls the crop of the bird was seen inflated, the head depressed, the tail lowered and the wings slightly opened.

After making a round of calls the bird was seen to preen itself.

This display and calls probably are territorial display and calls.

Display of painted snipe (*Rostratula benghalensis*)

In a paddy field lying fallow after harvest at Meenangady, near Kuppadi I could observe a group of painted snipe during

the dusky evenings of November and December 1990. The birds (mostly females) were seen jumping up about 30 cms at the same time spreading their wings, flashing their whitish underwings. Is this a territorial display or a mating display?

Anyway during this display the birds were silent.

Territorial display of grey drongo (*Dicrurus leucophaeus*)

On 3rd December 1991 at Kuppadi at about 11 am I observed two grey drongos sitting in a bamboo clump displaying. The birds were facing each other. One was in an aggressive mood, leaning forward uttering harsh calls and whistles. The other bird was in somewhat a defensive mood. It too was calling and whistling, though in a subdued manner. It was keeping its wings partially opened and the tail partially spread. Both flew away after some time. This probably is the territorial display of grey drongo.

Nesting of piculet (*Picumnus innominatus*)

While watching birds at Kuppadi, on 10th March 1992 I observed a piculet making a hole in a dry branch of an *Erythrina* tree. Later the bird was observed to climb into the hole and brood. I informed the renowned birdwatcher Mr P K Uthaman about this. He agreed to photograph the nesting. Nestlings came out after Ca.3 weeks. This may be the first breeding record for Kerala.

Occurrence of black bulbuls (*Hypsipetus madagascariensis*) at lower elevations

Typically, black bulbuls are found at an elevation of C.1000 mts or more. However rarely they have been observed at lower elevations. On 30th April 1993, I could see 3 black bulbuls at Kuppadi on the bushes near a stream preening after bath. Kuppadi's elevation is C.800 mtrs.

Breeding of bay-banded cuckoo at Kuppadi (*Cacomantis sonnerati*)

On 10th December 1994, myself and Mr P.K. Uthaman observed a female iora feeding an almost fully grown bay-banded cuckoo at Kuppadi. The breeding of bay-banded cuckoo according to the 'Handbook' is February to August. It is an unusual season for breeding of this bird to occur.

The fledgling was making subdued chee-chee calls to attract the attention of its foster parent.

Sighting of redwinged crested cuckoo at Kattappana, Idikki district.

Kattappana, situated 9° 34' N and 77° 5' E at C.900 mtrs is a part of Cardamom hills.

On 5th December 1994, I observed a slim bird flying and alighting in a jamun tree (*Syzygium cumini*) on the outskirts of a cardamom plantation. It stayed for a few moments and then flew off with rapid wing beats. The chestnut wings, pointed crest, white collar and its slim shape enabled it to be identified as red winged crested cuckoo (*Clamator coromandus*). During the time I observed it, it was silent.

All the observations except the last one are from Kuppadi near Sultan's Battery, Wynad district, Kerala. Sultan's Battery is a town in the Calicut-Bangalore highway.

The last note the one about Red winged crested cuckoo is from Kattappana in Idikki district, deep in the Cardamom hills.

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Bird Introduction in Hawaii, a Lesson to other Island Communities and how it could be used to address Ecological Issues



PRAVEEN K KARANTH, Ecology and Behavior Core Group, Department of Biological Sciences, State University of New York, Albany, NY 12222

The Hawaiian archipelago is perhaps one of the most beautiful and most threatened group of islands stretching over 1200 miles in the middle of the Pacific ocean. I was on a visit to these islands from December 22, 1994 to January 11, 1995. The five islands constituting a major portion of the archipelago are the islands of Hawaii, Maui, Kauai, Oahu and Molokai. These islands are situated almost midway between Japan and America, 2400 miles from the nearest land mass. I was placed in the city of Honolulu in the island of Oahu.

Originally Hawaii had about 70 species of endemic land and fresh water birds, but after the arrival of the Polynesians and more so after the first modern man (James Cook in 1778) set his foot on these verdant islands, almost 40% of these birds have gone extinct. Out of the remaining bird species, 50% of them are already endangered and a few are feared to be extinct. Hawaii also boasts of about 23 native oceanic birds (most of these birds are also found in other Polynesian islands). Sadly these birds are also facing threat due to excessive activities around their nesting sites. The major cause for the drastic decline in endemic birds is the loss of native habitat and the introduction of exotic animal and plant species.

Ever since my arrival to Oahu I saw only exotic birds and plants around me, even on less disturbed areas of the island. This was rather frustrating as I was very keen to see the well known honey creepers, which are widely cited as being a better example than Darwin's finches for evidence of natural selection. I met a few faculty at the University of Hawaii, Conservation Biology Program and had long chats with them about Hawaiian flora and fauna. What I came to know was truly disheartening. Out of the 4000 species of plants identified in Hawaii more than 3000 are introduced (mostly as crop plants). Some of these plants are slowly but surely encroaching into the native habitat aided by the introduced birds.

The native habitats are today confined to a few relic patches (some of them isolated) high up in the hills. So if one has to see native flora, one must trek through jungles full of exotic plants till the upper reaches of the hills, even there one finds the omnipresent Lantana. This is more so in the island of Oahu, which is exploited the most to accommodate the ever increasing needs of the tourism industry. Hawaiian islands being volcanic in origin, have very few native animal species. There are no native reptile, amphibian and the only native mammal is a bat called, the hoary bat. A number of

mammalian species have been introduced here accidentally and deliberately namely domestic cat, dog, goat, pigs and rats. Some of these have gone wild and these feral populations are depreeding native forest.

To control the population of rats, mongoose were introduced (from India) as a biological control agent. Unfortunately mongoose today is predated on bird nests instead of rats, perhaps one of the classical cases of failure of Biological control. Around 170 species of birds have been introduced in various islands here, ever since the first white settlers came to these islands (the only bird species introduced by the Polynesians is the domestic fowl), as opposed to 133 in New Zealand and only 119 in the whole of North America. For the combined size of Hawaii islands (10461 sq km) this is the largest ever introduction attempt (accidental or deliberate). Out of the 170 species introduced only about 53 of them have been known to have established in these islands and this number is growing with time (this is perhaps the highest number of introduced species ever known to have established in a new environment).

Not all of these introductions have had deleterious effects on the local flora and fauna (as is the case with most of the introductions). Many of these birds came here as cage birds (munias and finches) and were either accidentally or some of them deliberately released. Early settlers found that these islands are devoid of the numerous songbirds and colourful birds found in other tropical areas. In fact the 38 odd endemic species found here today are hypothesised to have evolved from only 15 original ancestral species from the main land.

To "enrich" the avifauna of these islands people began systematically to introduce certain species from Asia and America. Thus came the sky lark (from America), shama and white breasted laughing thrush (from Asia) among the song birds. Some of the birds introduced from aesthetic point of view were, the common peafowl, khali pheasant (from Asia) and the cardinal (from America). Birds were also introduced for biological control of insects, like the common myna (from Asia) to control pests of sugarcane and the cattle egret (from America) to control pests in cattle ranches. A few of the other species introduced from Asia are the red-vented and red-whiskered bulbuls, spotted munia, black headed munia, red munia, spotted dove, chukar, Japanese white-eye, hill myna etc.

Most of these introduced birds have caused the decline in the native avifauna, by either directly or indirectly competing with them, by bringing in new strains of diseases like the Avian malaria and also by facilitating the spread of exotic plants. The bulbuls are widely blamed for the spread of *Momordica sp* (Cucurbitaceae) and *Lantana camera* (Verbinaceae), both introduced from Asia. These plants are

seen in almost all forest tracts today and are believed to have speeded up the extinction of some endemic plants. Unfortunately very little work has been done on the introduced birds in Hawaii, most of the avian research have been concentrated on the rare and endemic birds.

One possible direction of study on the introduced birds, which is very interesting and exciting to me is to do a comparative study of some of these birds introduced from India in various regions of the world.

The species to look out for are spotted dove and red whiskered bulbul, which I came across not only in Hawaii, but also in southern California (between Jan 11 to 23, 1995). These observations induced me to explore other possible introductions of these birds in other areas. There are established population of spotted dove in Australia, New Zealand, California, Hawaii, Mauritius and the Andaman and Nicobar islands. In case of red whiskered bulbul, they have been introduced in Australia, Florida, California, Hawaii, Mauritius and the Andaman and Nicobar islands.

As these birds have been recently introduced (most of them within this century), it would be interesting to know how these birds are evolving and adapting to these new environments. Have their diets changed, when compared to their counterparts in India; has there been any modification in their breeding season? What changes do we find in their behavior due to the complete absence of certain predators? and so on. Such a study will have evolutionary, behavioral as well as conservation implication, as it will throw light on the breeding biology of these introduced birds. This will in turn help us ascertain the negative effect of introduced birds (if any) on the native flora and fauna and how to minimise or eliminate these effects.

What is happening in Hawaii should serve as an important lesson to other island communities like the Andaman and Nicobar islands where at least 12 avian species have been introduced out of which four are known to have established. We in India should try to prevent such unfortunate side effects of excessive tourism and careless introductions on local flora and fauna.

Acknowledgement

I would like to thank Subaray Hegde (University of California, Riverside) for his critical comments on the manuscript.

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The Mountain Quail (*Ophrysia superciliosa*)

BRIG RANJIT TALWAR (Retd), 172-B, Max Muller Marg, Lodi Estate, New Delhi 110 003

Slightly smaller than the grey partridge, the mountain quail is perhaps the least known of our birds. The earliest authentic record of its existence dates back to 1836, when a pair was shot in the vicinity of Mussoorie by a British sportsman. The last specimen was shot near Nainital in 1876. The species has not been sighted ever since and is believed to be extinct.

During the 40 years of its known existence in India, the collection of only ten specimens from the vicinity of Mussoorie and Nainital is on record and nine of these are held in various museums of the world. Unfortunately none of these is in India.

Unless man discovered the mountain quail at a time when it was already on the verge of extinction due to natural causes, the species is unlikely to have perished. Its natural habitat is still reasonably intact and the bird has certainly not been over hunted! Logic therefore forces one to believe that this extremely shy bird, though not seen since 1876, is still alive, somewhere in the lower Himalaya, where suitable conditions still exist.

A O Hume, the famous British ornithologist, writing about the mountain quail in his 1879-81 publication "The Game Birds of India, Burma and Ceylon", states, "It is as yet only known to occur occasionally, and during the cold season, in the neighborhood of Mussoorie, and again in the neighborhood of Nainital. But it is a bird of singularly retiring habits, can scarcely be induced to show itself unless pressed by a dog, and occurs only at a season when our hill stations are nearly deserted, and I dare say that it will prove to be a migrant ..." About other traits Hume adds, "They keep habitually in coveys of six to ten, though single pairs may be met with. They frequent grass jungle and brushwood, ..., fly slowly and heavily, and soon drop again, Quail-like, into cover. They feed on grass seeds (and probably insects and berries), and when feeding, call to each other with a low short Quail-like note, their alarm note and call when separated being a shrill whistle. Their range in the Himalaya in winter is probably from five to eight thousand feet."

While writing about the mountain quail, Hume has basically relied upon the inputs provided by only three British sportsmen who between them shot a total of eight birds over a span of eleven years (1865-76). This can hardly be termed, nor is it claimed by Hume to be, a comprehensive study and it may be prudent to critically analyse some of the important attributes as these have a direct bearing on the selection of areas for search in future.

Is it a Migrant?

Hume's conjuncture to explain the bird's irregular appearance in areas around Mussoorie and Nainital, that the

bird is possibly a migrant from the well-wooded south-eastern portions of Chinese Tibet, only during severe winters, appears to be incorrect. The body structure and recorded observations of this bird suggest that it was a poor flier and thus incapable of flying over long distances. The mountain quail was at best capable of local migration of a few thousand feet up and down during summer and winter respectively and should thus be treated as a resident bird of the lower Himalaya between the altitudes of 4000 and 8000 feet.

Distribution

Although there are some examples of terrestrial and arboreal beings whose distribution has been limited by natural barriers like rivers etc. it is difficult to accept that a bird like the mountain quail had only two island populations around Mussoorie and Nainital, when similar habitat extends beyond these areas. Ripley mentions a local name for the mountain quail from Dailekh district of Nepal: "Sano kalo titra", literal meaning, small black partridge. If the name is correctly attributed to the mountain quail, the distribution of the bird goes beyond the currently accepted limits. It is therefore possible that although the mountain quail had a much wider distribution, it was shot and identified only in the vicinity of Mussoorie and Nainital, as these two hill resorts supported a sizeable population of colonial British sportsmen, for whom bird shooting was a frequent pastime. Although many such sportsmen would have probably shot the mountain quail, only three of these were knowledgeable enough to realise that what they have shot was different and took the trouble of getting the birds identified by an expert. The rest probably just ate them up without realising their significance. The bird must have also been shot in the vicinity of smaller townships like Mukteshwar, Ranikhet, Lansdowne, Almora and Abbot Mount, where British sportsmen were active during the last century, but was never identified as a specific species.

It will be reasonable to assume that the distribution of the mountain quail extended from Mussoorie in the West to Nainital and onto the Indo-Nepal border. How much further east did it extend, is impossible to state, unless fresh evidence is obtained.

Mountain Quail

Known and deduced specifics

- 1 Size : In between a quail and a partridge
- 2 Appearance : The legs and beak may be darker red than what is shown. The male and also possibly the female may have a small crest-like feathered growth on the forehead. This growth could be permanent or seasonal.

- 3 Distribution : Between the altitude belt of 4000-8000 feet from Mussoorie to the Indo-Nepal border. The bird is likely to be found in the lower half of the bracket during winter and in the upper half during summer.
- 4 Typical habitat : Sun bathed, south facing steep slopes covered with grass and scrub growth. Favours areas near the crest-line.
- 5 Call : Typical low and short quail like note for keeping in touch with other members of the covey while feeding in grass. Their alarm call or when separated from each other is a shrill whistle.
- 6 Food : Grass seeds, insects and berries.
- 7 Habits : May be found in pairs or coveys of six to ten birds. Extremely shy of man and will rarely be found in the open. Its presence in a patch of grass may only be revealed by its frequent quail like calls while feeding. Very difficult to flush but can be made to show itself by employing dogs. Even untrained village dogs will be able to flush the birds. A poor and reluctant flier that will settle down in grass only a short distance away from where flushed. If left undisturbed after a flight, the scattered birds of the covey will emit the shrill whistle call to establish contact with each other to reassemble.
- 8 Breeding : Nothing is known
- 9 Recognition features : (a) Peculiar colouring of the male
(b) White streaks running through the eyes of both male and female birds. More prominent in the male
(c) Black and white under tail colouring in the male
(d) Red legs and beak
- 10 In case you spot the mountain quail or know of its existence in a particular area : (a) Ensure that the birds are not harmed in any manner and that the area is not disturbed
(b) Write to the author giving details like, exact location where sighted, date, altitude (if known), number of birds sighted etc.



Birds of Arignar Anna Zoological Park, Vandalur, Madras

A MANIMOZHI, P ASAITHAMBI, M SEKAR and N BHASKAR, Biologists, and M JAGANNADHA RAO, Deputy Director, Arignar Anna Zoological Park, Vandalur, Madras 600 048

The Arignar Anna Zoological Park, extending over an area of 510 ha is one of the biggest zoos in South-East Asia. It is located on the Eastern side of the Grand Southern Trunk Road, 32 km south of Madras city in Vandalur Reserved Forest of Chengalpeta-MGR District. It has dry evergreen, dry deciduous and thorn scrub types of forests. Apart from natural vegetation, the park contains substantial numbers of artificially regenerated fruit and flower bearing tree species. This park has a variety of indigenous fauna apart from exotics maintained in well designed dry and wet moat enclosures for conservation and research which attracts lot of visitors to the park.

Owing to the presence of small hillocks, undulating terrain and two water tanks and also due to the protection offered to the park, this area hosts a diversity of birds both resident and migratory. Of late, the occurrence of large number of birds has generated lot of interest not only among the visitors but also attracted many bird lovers from throughout the State. Hence a study has been made to bring out a checklist of the birds of Arignar Anna Zoological Park.

The occurrence of birds in the park was studied during the months of January and February 1994 by making thorough scanings throughout the park during different periods of the day from 6 am to 6 pm. During these two months, seventy species of birds have been recorded of which 61 are terrestrial and the rest (9 species) are water birds (Table 1).

TABLE 1
Checklist of Birds Sighted During The Month of
January and February 1994

Sl.No.	Common name	Scientific name
Family : Podicipedidae		
1	Little grebe	<i>Podiceps ruficollis</i>
Family : Phalacrocoracidae		
2	Little cormorant	<i>Phalacrocorax niger</i>
Family : Ardeidae		
3	Pond heron (or) Paddy bird	<i>Ardeola grayii</i>
4	Little egret	<i>Egretta garzetta</i>
5	Night heron	<i>Nycticorax nycticorax</i>
Family : Ciconiidae		
6	Openbill stork	<i>Anastomus oscitans</i>
7	Painted stork	<i>Mycteria leucocephala</i>
Family : Accipitridae		
8	Pariah kite	<i>Milvus migrans govinda</i>
9	Brahminy kite	<i>Haliastur indus</i>
Family : Phasianidae		
10	Grey partridge	<i>Francolinus pondicerianus</i>
11	Common peafowl	<i>Pavo cristatus</i>
Family : RALLIDAE		
12	Purple moorhen	<i>Porphyrio porphyrio</i>
Family : Recurvirostridae		
13	Black winged stilt	<i>Himantopus himantopus</i>
Family : Charadriidae		
14	Yellow-wattled lapwing	<i>Vanellus malabaricus</i>

Family : Columbidae

- | | |
|----------------------|----------------------------------|
| 15 Blue rock pigeon | <i>Columba livia</i> |
| 16 Little brown dove | <i>Streptopelia senegalensis</i> |
| 17 Spotted dove | <i>Streptopelia chinensis</i> |

Family : Psittaciidae

- | | |
|------------------------|---------------------------|
| 18 Roseringed parakeet | <i>Psittacula krameri</i> |
|------------------------|---------------------------|

Family : Cuculidae

- | | |
|-------------------------------|-----------------------------|
| 19 Pied crested cuckoo | <i>Clamator jacobinus</i> |
| 20 Small green billed malkoha | <i>Rhopodytes tristis</i> |
| 21 Crow-pheasant (or) Coucal | <i>Centropus sinensis</i> |
| 22 Indian cuckoo | <i>Cuculus canorus</i> |
| 23 Koel | <i>Eudynamis scolopacea</i> |

Family : Strigidae

- | | |
|---------------------------------------|--------------------|
| 24 Barn owl | <i>Tyto alba</i> |
| 25 Eagle owl (or)
Great horned owl | <i>Bubo bubo</i> |
| 26 Spotted owlet | <i>Athya brama</i> |

Family : Caprimulgidae

- | | |
|---------------------------|------------------------------|
| 27 Common Indian nightjar | <i>Caprimulgus asiaticus</i> |
|---------------------------|------------------------------|

Family : Apodidae

- | | |
|----------------|-------------------------|
| 28 Palm swift | <i>Cypsiurus parvus</i> |
| 29 House swift | <i>Apus affinis</i> |

Family : Alcedinidae

- | | |
|---------------------------------------|--------------------------|
| 30 Whitebreasted kingfisher | <i>Halcyon smymensis</i> |
| 31 Common or small blue
kingfisher | <i>Alcedo atthis</i> |

Family : Meropidae

- | | |
|--------------------|--------------------------|
| 32 Green bee-eater | <i>Merops orientalis</i> |
|--------------------|--------------------------|

Family : Coraciidae

- | | |
|------------------|-----------------------------|
| 33 Indian roller | <i>Coracias bengalensis</i> |
|------------------|-----------------------------|

Family : Upupidae

- | | |
|-----------|--------------------|
| 34 Hoopoe | <i>Upupa epops</i> |
|-----------|--------------------|

Family : Capitonidae

- | | |
|---------------------------|-------------------------------|
| 35 Crimsonbreasted barbet | <i>Megalaima haemacephala</i> |
|---------------------------|-------------------------------|

Family : Picidae

- | | |
|--------------------------------------|-----------------------------|
| 36 Lesser goldenbacked
woodpecker | <i>Dinopium benghalense</i> |
|--------------------------------------|-----------------------------|

Family : Pittidae

- | | |
|-----------------|------------------------|
| 37 Indian pitta | <i>Pitta brachyura</i> |
|-----------------|------------------------|

Family : Alaudidae

- | | |
|-------------------------|-------------------------|
| 38 Sykes's crested lark | <i>Galerida deva</i> |
| 39 Bush lark | <i>Mirafra assamica</i> |

Family : Laniidae

- | | |
|---------------------|-------------------------|
| 40 Baybacked shrike | <i>Lanius vittatus</i> |
| 41 Brown shrike | <i>Lanius cristatus</i> |

Family : Oriolidae

- | | |
|------------------|------------------------|
| 42 Golden oriole | <i>Oriolus oriolus</i> |
|------------------|------------------------|

Family : Dicruridae

- | | |
|-----------------|-----------------------------|
| 43 Black drongo | <i>Dicrurus leucophaeus</i> |
|-----------------|-----------------------------|

Family : Sturnidae

- | | |
|------------------|--------------------------|
| 44 Brahminy myna | <i>Sturnus pagodarum</i> |
|------------------|--------------------------|

- | | |
|----------------|-----------------------------|
| 45 Common myna | <i>Acridotheres tristis</i> |
|----------------|-----------------------------|

Family : Corvidae

- | | |
|--------------------|------------------------------|
| 46 Indian tree pie | <i>Dendrocitta vagabunda</i> |
| 47 House crow | <i>Corvus splendens</i> |
| 48 Jungle crow | <i>Corvus macrorhynchos</i> |

Family : Compephagidae

- | | |
|-------------------------------|---------------------------------|
| 49 Blackheaded cuckoo shrike | <i>Coracina melanoptera</i> |
| 50 Smaller grey cuckoo shrike | <i>Coracina melaschistos</i> |
| 51 Small minivet | <i>Pericrocotus cinnamomeus</i> |

Family : Irenidae

- | | |
|----------------|-------------------------|
| 52 Common lora | <i>Aegithina tiphia</i> |
|----------------|-------------------------|

Family : Pycnonotidae

- | | |
|------------------------|----------------------------|
| 53 Redwhiskered bulbul | <i>Pycnonotus jocosus</i> |
| 54 Redvented bulbul | <i>Pycnonotus cafer</i> |
| 55 White browed bulbul | <i>Pycnonotus luteolus</i> |

Family : Muscicapidae

- | | |
|--------------------------|------------------------------|
| 56 White headed babbler | <i>Turdoides affinis</i> |
| 57 Common babbler | <i>Turdoides caudatus</i> |
| 58 Paradise flycatcher | <i>Terpsiphone paradisi</i> |
| 59 Ashy wren warbler | <i>Prinia socialis</i> |
| 60 Magpie robin | <i>Copsychus saularis</i> |
| 61 Indian robin | <i>Saxicoloides fulicata</i> |
| 62 Pied bush chat | <i>Saxicola caprata</i> |
| 63 Tailor bird | <i>Orthotomus sutorius</i> |
| 64 Plain wren-warbler | <i>Prinia subflava</i> |
| 65 Rufousbellied babbler | <i>Dumetia hyperythra</i> |

Family : Motacillidae

- | | |
|-----------------------|----------------------------------|
| 66 Large pied wagtail | <i>Motacilla maderaspatensis</i> |
|-----------------------|----------------------------------|

Family : Dicaeidae

- | | |
|---------------------------|--------------------------------|
| 67 Tickell's flowerpecker | <i>Dicaeum erythrorhynchos</i> |
|---------------------------|--------------------------------|

Family : Nectariniidae

- | | |
|-------------------------|-----------------------------|
| 68 Purplerumped sunbird | <i>Nectarinia zeylonica</i> |
| 69 Loten's sunbird | <i>Nectarinia lotenia</i> |

Family : Zosteropidae

- | | |
|--------------|-----------------------------|
| 70 White eye | <i>Zosterops palpebrosa</i> |
|--------------|-----------------------------|

Some seasonal birds sighted are large pied wagtail, golden oriole, lesser goldenbacked woodpecker, coppersmith, Indian pitta, brainfever bird. We have also observed the smallest bird of India, the Tickell's flowerpecker (*Dicaeum erythrorhynchos*) which is slightly bigger than normal human thumb. Mynas, house crows, sparrows and bulbuls are common and occur abundantly in this area. One of the large resident birds of this zoological park peafowl (*Pavo cristatus*) has also been sighted in large numbers.

Nesting of common birds and paradise flycatcher (*Terpsiphone paradisi*) have been observed in many areas of this park. During the short term study of two months period itself 70 species of birds have been observed. A long term study will definitely be able to reveal more information about the number of species and their habitats.



The authors are thankful to Mr S Shanmugasundaram, IFS, Chief Conservator of Forests (WL) and Chief Wildlife Warden, Tamilnadu and Mr R Sundararaju, IFS, Director, Arignar Anna Zoological Park for the constant encouragement in the field of research.

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Incubation Pattern in the Red-vented bulbul *Pycnonotus Cafer* in Relation to Atmospheric Temperature and the Phase of Development of Eggs

R.N. DESAI, Zoology Department, Karnataka Science College, Dharwad 580 001

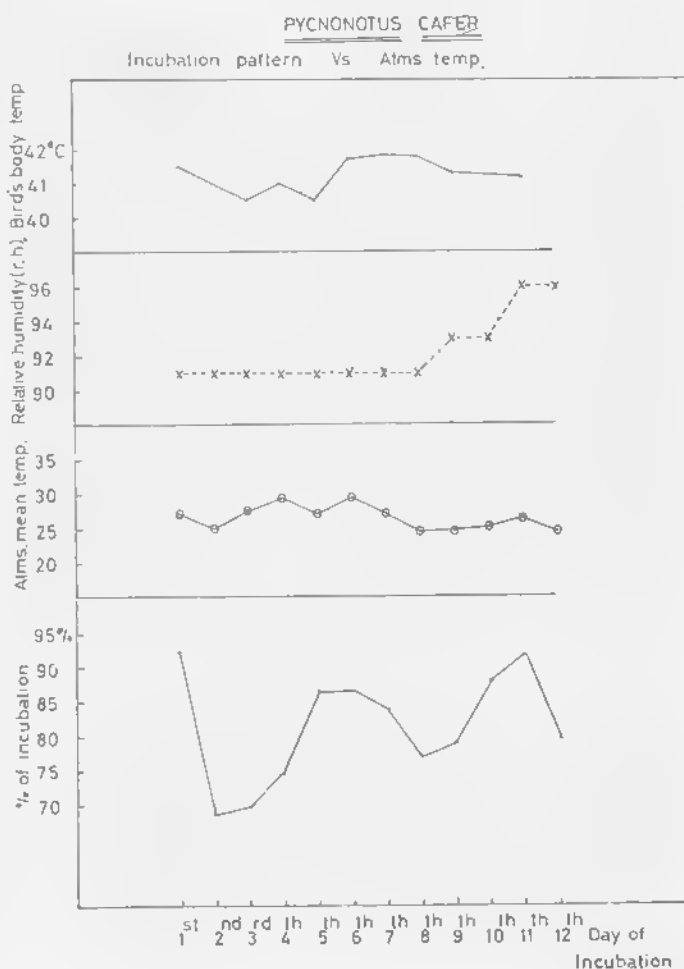
The influence of atmospheric temperature on the architecture and materials used in the construction of bird nests has been studied. Compact nests with a lot of insulating material is the characteristic of temperate and sub-temperate regions, in contrast to the loosely constructed nests with minimum use of insulating material of the tropical regions. The former retains heat, while the latter promotes dissipation (Wing, 1956; Drent, 1975; Murton and Westwood, 1979; Ali, 1979; Kinnear, 1986; and Wesley, 1994). Equally important is the influence of the atmospheric temperature on the pattern of incubation by the parent birds. Furthermore the relationship between the pattern of incubation and the phase of development of eggs has also been reported (Putnam, 1941 vide Berger, 1961; and Desai, 1993). The present work aims at understanding the relationship if any, between

- the percentage of incubation and the atmospheric temperature, and
- the former and the phase of development of eggs of the red-vented bulbul *Pycnonotus cafer* so widely distributed in and around Dharwad city (15° 28' N and 79° 01' E) (Karnataka State, India).

On June 4th 1994, two eggs were laid in a cup-like nest constructed on the chandelier in our house. From the day of incubation till the hatching of the eggs the atmospheric temperature, the incubating bird's body temperature and the duration of incubation (in minutes) were recorded every hour from 06.00 hr to 19.00 hr (780 mts) on each day. From this data the percent of incubation for each day has been calculated. Further, the differences between these percentages on days 1 & 2; 2 & 3; 2 & 5; 2 & 8 and 2 & 11 have been assessed statistically by applying Z-test to ascertain if they are significant. During this period it was also verified if the parent bird/s developed any brood patch.

Incubation of the eggs commenced only on 5th June, 1994. That day is considered as the first day of incubation. The atmospheric temperature showed a

gradual drop from $27.46 \pm 0.45^\circ\text{C}$ to $24.83 \pm 2.88^\circ\text{C}$ and the relative humidity rose from 91% to 96% from the first day to last day of incubation i.e. from 5th to 16th June 1994 (Fig.1). The parent bird/s did not develop any brood patch during the



entire period of incubation. Their body temperature varied between 40.5°C and 41.8°C (Fig.1).

Incubation of the eggs (attentiveness of the incubating birds) was 92% on the first day and it dropped to 69% on the second day. It rose to 86% by 5th day and was fluctuating around that value till the end i.e. 12th day of incubation. Out of several sittings by the parent bird/s in the nest from 6.00 hr to 19.00 hr on each day two to five were invariably prolonged ones, ranging upto 67 mts at a stretch. Of these about half were in the morning. The non-sitting periods during the day time ranged from 11 mts to 23 mts only, and on one occasion it was of 45 mts. On each day from 19.00 hr to 6.00 hr on the next day incubation was invariably a continuous process.

The drop in the percent of incubation from day 1 to day 2, and the subsequent increases from day 2 to day 5 finally from day 2 to day 11 which is the penultimate day of incubation, when analysed statistically yielded the following values 6.174, 7.074 and 23.013 respectively and they are significant at 1% level while those from day 2 to day 3 and day 2 to day 8 were insignificant (Table 1).

TABLE 1 :
Showing variations in the percentage of incubation

Incubation days	Incubation %	Z-test values
1 - 2	92.0 - 69.0	6.17*
2 - 3	69.0 - 69.2	N.S.
2 - 5	69.0 - 85.9	7.07*
2 - 8	69.0 - 76.8	N.S.
2 - 11	69.0 - 91.3	23.01*

* Statistically significant at 1% level

The data reveals that, i) the incubating parent bird cannot transmit its entire body heat to the eggs as it does not develop any brood patch during the incubating period; ii) when the bird is off the nest some heat is lost from the eggs to the surroundings owing to the loose construction of the nest and lack of any insulating bed resulting in a lot of ventilation; iii) on the first day of incubation the percentage of incubation was highest as the eggs on laying were suddenly exposed to atmospheric temperature of 27°C ... a conspicuous drop from 41.5°C of the body temperature to which they were acclimatized during their retention in the body of the parent bird; iv) excepting this, the percentage of incubation during the initial stage or the first quarter of development is conspicuously low indicating that the required temperature for the egg development is much closer to the atmospheric temperature; and v) with continued development the demand for heat increases as revealed by

the increase in the percentage of incubation and also by the increased duration per sitting.

Most tropical birds favour loose construction of nests with minimum insulating materials, encouraging ventilation (Ali, 1979; Drent, 1975; Kinnear, 1986; and Murton and Westwood, 1977). For example, the ashy Wren Warbler *Prinia socialis* constructs such loosely knit nests (Desai, 1993) from which a lot of heat dissipates to the surroundings (Wesley, 1994) and its average percentage of incubation was around 45% (Desai, 1993). Berger (1961) also proposes a negative correlation between incubation periods and the atmospheric temperatures and humidity and their minimal fluctuations. *P. cafer* showed a very high percent of incubation (81.08%) as observed in the present study, which might be to counter a very low atmospheric temperature throughout the course of incubation. Finally, the pattern of incubation in the red-vented bulbul *P. cafer* shows essentially an adaptive behaviour not only to regulate the nest temperature regime with reference to the atmospheric temperature as Wesley (1994) puts it but also with reference to the stage of the developing egg. From a low percentage in the initial stage, incubation gradually increases throughout the later stages in *P. cafer*. Our findings support the hypothesis of increased attentiveness with the advancing stages of development (Putnam, 1949 cited in Berger, 1961).

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Correspondence

WORLD'S LARGEST HARRIER ROOST. RISHAD NAOROJI, M/s. Godrej Boyce Mfg. Co. Ltd., Godrej Bhavan, 4A Home Street Fort, Bombay 400 001

Many years ago Dr Y Jhala (from the Wildlife Institute, Dehra Dun), studying wolf ecology at Velavadar National Park had informed me of large numbers of harriers roosting

in the park. By then (Rahmani and Manakadan JBNHS 1983) had published a note of a large harrier roost at the Roliapadu Bustard Sanctuary in Andhra Pradesh.

When we finally visited Velavadar (as part of the BNHS raptor project team) we were astounded. We estimated around 1500 harriers, comprising mainly of Montagu's followed by the pallid, a few hen harriers and the occasional marsh.

When harrier specialist Roger Clarke of the Hawk and Owl Trust visited this classic flatland harrier country (locally known as the Bhal in Saurashtra), he estimated up to 2000 birds, the previously known record for the world's largest roost (almost a thousand Montagu's) being in Senegal, W. Africa, in response to a high density of the Desert Locust *Schistocera gregaria* (Cormier J-P and Baillon F. 1991).

The harriers at Velavadar subsist mainly on locusts, followed by small birds, rodents and occasionally small reptiles. They mostly hunt (for locusts) over the cotton crop outside the park, a local, low yielding variety requiring no irrigation. The present land use and crop pattern favours the harriers which forage over the low, well spaced-out cotton bushes. If the land use pattern is altered, or a high yielding variety of cotton requiring plenty of water is introduced, it may drastically affect the foraging pattern of the harriers.

The roosting spectacle is spectacular. At dusk, waves of harriers (in loose groups of twos and fours) stream in from all directions into the grassland. They initially pre-roost on all available open, barren ground (which is preferred), or at favoured spots in the tall grass. After sunset, as if by some pre-arranged signal, the harriers begin to fly, lifting slowly into the wind from the pre-roost to the night-roost site where an increasingly large cloud of gathering harriers (Montagu's and pallid) mill about in an anti-clockwise or clockwise carousel for 10 to 15 minutes before finally dropping down to roost in the grass and gathering darkness. Usually one main flock from 600 to 1000 birds and smaller separate groups of a few hundred birds can be observed during this ritual. At first light (about half an hour before sunrise), the harriers rise out of the grass and fly off singly or in loose waves of 2 to 5 birds to forage in the countryside beyond the park boundary.

A joint Hawk and Owl Trust and BNHS project have been monitoring the harriers at Velavadar. Readers and members of ornithological societies are urged to write to the Newsletter about locations of harrier roosts, even small ones so that we can identify and protect the foraging and roosting habitat of these long-distance travellers.

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THE POSSIBLE ROLE OF THE SHIKRA AS A TOP PREDATOR IN THE ECOLOGICAL FRAMEWORK OF THE MADRAS CHRISTIAN COLLEGE CAMPUS. JOHN MATHEW and S.M. SELVARATHINAM, *The Scrub Society, Madras Christian College, Tambaram, Madras 600 059*

Located at 12° 55'N (Lat) and 80° 7'E (Long) in southern suburban Madras, the Christian College campus has long played host to a diverse assemblage of plants, inclusive of species both native and exotic to the tropical dry evergreen forest type (which characterises the vegetation of a highly

restricted part of the country along the Coromandel coast in parts of northern Tamil Nadu and extreme southern Andhra Pradesh). Such a delicate admixture of floristic forms allows for a bewildering array of animal species. Predominant among vertebrate groups are reptiles (snakes and lizards), birds and smaller mammals (with the exception of the Spotted Deer, *Axis axis*), with birds enjoying pre-eminence through sheer diversity (154 species have been recorded in the area since observations were first undertaken in the mid 1930s).

It is in such a context that the role of the shikra (*Accipiter badius*), as an end consumer in the food chain, assumes significance. By far the most common raptor encountered on campus by the authors during four years of serious bird study (1990-'94), the shikra has been observed to manifest eclectic selection by way of choice of prey, as may be evidenced below:

- 1 The common bloodsucker or garden lizard (*Calotes versicolor*)
- 2 The crimson breasted barbet or coppersmith (*Megalaima haemacephala*)
- 3 The hoopoe (*Upupa epops*)
- 4 The blacknaped hare (*Lepus nigricollis*)

The first three species fit into the category of a "normal diet" for the bird, as indicated by Ali (1981); however, the attack on the blacknaped hare (in this case, a juvenile which escaped with superficial injuries, owing to the efforts of a number of bystanders, on its behalf), adds an intriguing dimension to the known feeding ecology of the shikra. More importantly, given the absence of any large mammalian carnivore (only smaller forms inclusive of the jungle cat, *Felis chaus* and the jackal, *Canis aureus*, apart from feral dogs, have been observed in recent times), and the scanty demonstration of other raptor species "Inclusive of the 1. blackwinged kite (*Elanus caeruleus*), 2. pariah kite (*Milvus migrans*), 3. brahmyn kite (*Haliastur indus*), 4. crested honey buzzard (*Pernis ptilorhynchus*), 5. booted hawk-eagle (*Hieraaetus pennatus*), 6. Indian kestrel (*Falco tinnunculus*) on campus, it may be proposed that their position in the food chain is, in many ways, assumed by the shikra, which thus discharges the role of a tertiary consumer, and possibly, even a top predator (given small prey size in general), within the framework of the local ecosystem.

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WHICH BIRD IS THIS ?. SATPAL SINGH GANDHI, 87-D, Park Road, Dehra Dun 248 001

Recently I spotted a nest near a water reservoir in Dehra Dun on 21st Nov 1994 on a bush about 2-3 feet at the edge of the bank. The nest was made up of white feather-like flowers of some tall grass. Its size was about 20 inches in length, its entrance was like a tunnel and at its rear part there was room for laying eggs. When I went and peeped into the nest, I saw a tiny egg, pearl in color but to my astonishment the size of the egg was not bigger than the nail of my middle finger. Can you help me in identification of the bird?.

The same day I observed a bird of the grebe family along with the little grebe. I want to confirm whether it is a black necked grebe. Its size was slightly bigger than that of little grebe. Its white cheeks were quite prominent and eyes were deep red in color. The bird moved very fast and didn't give me a chance to take its photograph.



CAN A CRANE EAT A CRANE ?. NICKY K XAVIER, Centre of Wildlife & Ornithology, Aligarh Muslim University, Aligarh 200 002, UP

Are cranes cannibals? Not so, to go by their reputation. To the best of my knowledge there are no reported cases of a crane eating a crane. I had been firm in that belief when I met with an experience which overturned my entire thinking on the subject.

I used to be a frequent visitor to a family of sarus cranes (*Grus antigone antigone*) living in the short stretch of marsh land beyond the AMU campus behind its petrol bunk. The area abounded in water hyacinth and rushes (*Typha*), which provided a safe nesting place to a variety of bird-life.

Not far away from the boundary was the family of sarus cranes: the father, the mother and a hatchling who spent their happy days, unmolested by humans and predators.

It amused me to watch them, the mother feeding the new born young, while the father stood sentry to their tortification amidst grass, in which an egg still lay unhatched.

Their abode was about three feet in diameter, made up of grass uprooted from the area around, with the fringes of the nest laid bare, more or less resembling a miniature moat. The grass was plaited together so as to make the nest a strong and sturdy living place.

It was an evening in early September. I was taking a stroll around the fringes of the campus along with a class-mate of mine. My teacher, Asad R Rahmani had wanted me to keep a tab on the development amidst the grass. I had not been anticipating anything unusual, when a sight astounded me. What I saw was the male, it must be a male to go by its comparative size, was keenly feeding on something. In a jiffy I took out my Olympus-35ED and started to take shots, which scared the birds away. I was therefore, able to capture the picture only of the prey that lay still a little away from the nest. It was only then I realized the meaning of what the bird had been doing the day before. I had found it then voraciously pecking away at something. It must have been the same young which lay dead now at its feet insensitive to the cruel bill of its progenitor. But the thought never entered my head at that time.

I immediately went to my department and reported my finding to my teacher who accompanied by a good number of

research-scholars and myself went en masse to the spot. But the sight of the crowd put the giant birds on a flight of escape. The couple were seen the next day just hanging around the area. That was the last I saw of them.

What turned the affectionate and watchful parent into a cruel cannibal? Even so much as a random peep taken or the slightest disturbance made by man or animal is said to drive birds in general, to kill their own progeny. Could it be that the unwelcome visit, we paid to the nest led to the act of immolation. I doubt: as water-buffaloes and pigs had a free access to the locale. Food shortage can be another explanation, but the area cannot be treated as drought stricken in as much as during the same season the year before a sarus couple, probably the same, successfully reared twins, which could happen only when food supply is abundant. It is also a known fact that the marsh land has a copious supply of tubers, a favourite delicacy of cranes. Yet another reason for cannibalism could be the presence of a macho male more powerful than the real father, who might have been scared away. Of course, it must be admitted that we were not able to make out whether it was the earlier parent or an impostor who made the kill and fed on it.

One may point out that the scene could be better described as that of scavenging than as cannibalism. First of all, cranes are never known to be scavengers. Further scavengers do not eat their own species. Take any example, that of crows or vultures. Which leads us on to the inescapable conclusion: cranes, at least sarus cranes, can indulge in cannibalism, may be, on rare occasions.



ENGLISH NAMES OF BIRDS. V.R. JAYAPAL, 1304, Kamarajar Street, East Gate, Thanjavur 613 001, TN

This is with reference to the issue of the use of upper case initials in the English names of birds (NLBW, Vol.34, No.6).

I remember the very matter was brought to the fore by you at the beginning of the decade and several well-informed readers like PT Thomas, Joseph George, Daniel Wesley and FM Gauntlett came out with convincing answers to why the employment of capital letters should not be discontinued.

While almost the entire world of ornithology is practising the uniform pattern of using upper case initials in the common names of birds, I fail to understand why we should attempt on a retrograde step of using lower case initials which will clearly isolate us further from the mainstream of ornithology (for, it is a known fact that we have already been marooned, as it were, through the use of indigenous common names and outdated scientific names).

As you have yourself observed in the editorial of a past issue of the Newsletter (NLBW Vol.34, No.5), we must keep pace with the world; otherwise there will be much confusion in the years to come. And I could say, the consequence would be not only the confusion but we will be altogether ignored and left behind as well.

In case you are still unconvinced of the use of capital letters in the English names of birds, the choice may kindly be left to the authors/contributors themselves which would be the solution pro tempore. For, I am afraid, the editorial conversion of English names of birds to the pattern of lower case initials (as has been done in the last issue of our

Newsletter) would be mistaken for the author's attitude and his/her individuality will be in for a severe damage.

Moreover, let us not squander our precious time on such unnecessary debates and instead, we could devote more time and energy to the process of standardization of both the English and scientific nomenclature of our birds in accordance with the international form, a job that was initiated by Andrew Robertson and Asheesh Pittie some months ago.

Finally, it is a matter of pleasure to know that our Newsletter is going to have hyphenation for the compound names of birds which is again a universally-accepted practice and will be sure to take us close to the international arena of ornithology.



UNUSUAL CALLS OF BARBETS. KUMARAN SATHASIVAM, 29 Jadamuni Koil Street, Madurai 625 001

Are the common barbets in Bangalore the small green or the large green barbets? Many birdwatchers familiar with the birds of the city will have the answer. However, as I was not armed with binoculars on my visit there at the end of February, I did not get sufficiently good views to say definitely that they were *Megalaima viridis*.

Apparently it was the breeding season — one individual I observed was perched on a branch with food in its bill, and sat there motionless till I left a few minutes later. It was obviously waiting to fly into a nearby nest-hole harbouring its young.

Later, I found another of these green barbets making an unfamiliar call. I can best describe the call as a rich and pleasant "chweep-peep". This was produced several times by the barbet from a slender bough. This call is not recorded for either the small green barbet or the large green barbet in Ali and Ripley's Handbook, and is therefore of interest. I have previously heard the coppersmith uttering low and short snarls when chasing off rivals from its nest tree. This vocalization again, is not mentioned in the books.



OPERATION RESCUE FOR THE GUAM RAIL

In the 1770s, when the English navigator James Cook launched the scientific exploration of the South Pacific, flightless rails could be found on a number of tropical islands from the Solomons in the west to remote Henderson Island in the east. Two centuries later, the majority of those bird species were known or believed to be extinct.

Most of the lost rails were the victims of introduced predators: the Norway rat, feral cats and dogs and the mongoose. One survivor was the Guam rail, and in 1968 its population on the 209-square-mile (540-square-kilometer) island of the same name was estimated at 80,000 birds. By 1986, however, the Guam rail was extinct in the wild, exterminated by a voracious, alien snake.

In a last-minute rescue operation, the Guam Division of Aquatic and Wildlife Resources captured 19 rails in 1984 for

captive propagation. Now, a long-awaited attempt to return the Guam rail to the wild is about to begin. If biologists succeed, it will be the first time that a viable breeding population of a rare bird has been re-established after the species disappeared or was totally removed from its native habitat.

"Starting in late February or March, we will release 30 to 50 rails every three months for as long as it takes," said Dr Kelly Brock, the biologist who directs the project for the Guam wildlife agency. "These will be surplus birds that are not genetically valuable because we expect high mortality until they get a foothold."

Guam rails are remarkably prolific birds. A typical family group includes adults with a clutch of three or four eggs, one-month-old chicks and immature birds that begin breeding at the age of three or four months.

The Guam rail, though will not be coming back to Guam, at least not in the immediate future. The species' new home will be nearby Rota, an island that apparently has not been invaded by its nemesis, the brown tree snake.

A strikingly marked bird measuring 11 inches (28 centimeters) from bill to tail, the Guam rail is a bit larger than the Virginia rail of North American marshes. The flightless rails on South Pacific islands, however, were forest or grassland birds. The Guam rail feeds on snails, slugs, geckos and grasshoppers rather than crabs, amphibians and other aquatic life.

Unlike other flightless rails, the Guam rail "coexisted nicely" with rats, cats, dogs, monitor lizards and indigenous predators such as the egg-robbing Mariana crow and Micronesian starling, said Dr Brock. But the rail and other native Guam birds were doomed when brown tree snakes from Manus in the Admiralty Islands in Paupa New Guinea stowed away on a US Navy ship and invaded the island soon after World War II. A tree-climbing constrictor, the snake feeds on skinks and geckos when young and then switches to warm-blooded prey. It can easily swallow an adult rail, said Robert Beck, a Guam biologist.

By the time scientists decided the snake rather than pesticides or some exotic disease was responsible for the disappearance of Guam's avifauna, there were a million or more brown tree snakes on the island and hardly any native birds. Three songbirds were wiped out, and the rail and a Guam kingfisher survive only in captivity.

[International Herald Tribune, 2nd March 1995]

Cover: **Ceylon Frogmouth** (*Batrachostomus moniliger*). A well camouflaged bird of the evergreen forests and confined to the southern heavy rainfall tracks of western ghats of India and Ceylon. A shy nocturnal nightjar like bird, vermiculated and mottled with several shades of brown and grey, the frogmouth has the habit of sitting motionless, with the bill pointing skywards - often overlooked as a broken stump in the dense secondary jungle with cane brakes. Photo: S. Karthikeyan.

Editor: **ZAFAR FUTEHALLY**, No 2205, Oakwood Apartments, Jakkasandra Layout, Koramangala 3rd Block, 8th Main, Bangalore 560 034.

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We surveyed the Thailur lake, a crucial lake for pelicans and storks, which is slowly getting silted up. "The present water impounding capacity of our lake is just a third of what it could hold 15 years ago" lamented the villagers, as scores of large grey babblers raised a deafening chorus from a tree across the dried up lake. As we skirted the waterless shores of the Thailur lake, muted hum of voices and loud speakers trailing notes of a celebrated play back singer of yesteryears could be heard. But moods of quite despair was evident at Thailur - "This is the heavy price we are paying for our ecological mistakes" one villager blurted out as he deftly chipped tender coconuts and offered them to quench our thirst.

We drove along the tree bordered back roads and through the sombre hamlets of Halagur and K.M. Doddi to survey the other lakes. The survey confirmed our gloomy prognosis. We could feel the full weight of the problem in almost every wetland.

In 60% of the lakes frequented by the pelicans, large scale unregulated fishing activities were noticed, while in the rest moderate fishing operations were observed. Thirty three percent of the lakes were receiving residual fertilizers and chemicals from the agricultural fields surrounding them. Twenty two percent of the lakes were polluted by inflow of domestic sewage. In thirty percent of the lakes, agriculture along drying margins was noticed. Thirty percent of the lakes exhibited excessive growth of vegetation and weeds. Bird shooting was reported from twenty percent of the lakes.

For centuries the birds have been frequenting the lakes surrounding the rivers Cauvery and Shimsha. But the once fish-rich lakes can no longer provide adequate quantity of fish. Every one seemed to agree when a villager narrated how the lakes are slowly becoming unfit for the pelicans and storks.

The threat today is one of gradual destruction of their habitat on one hand and the worrisome dearth of trees suitable for nesting on the other. The loss of wetlands with abundant fishes, loss of trees suitable for nesting in the heronry, hunting pressures and pollution seem to be the main causes for the drastic decline of pelicans.

Strange as it may sound, by reason of their friendly exposure to humans and protection enjoyed only at the breeding colony, the juveniles are particularly vulnerable to hunting, soon after they leave the colony in search of fish. The birds reared at the enclosure are also prone to a similar predicament.

There is another disturbing news of a nightmare that has just begun for the pelicans and storks at Kokre Bellur. The State Electricity Board has recently energized a 11,000 V electric supply lines that run along the main road, bordering the trees used by the birds for nesting. This year two painted storks were electrocuted when their wings unwittingly touched the live wires while taking off from the nest or while returning. A request for relocation of the electric poles and wires is under consideration, but it might take a long time before a decision is taken in this regard. We have now suggested to the KEB authorities to provide plastic sleeves to the live wires,

atleast in the proximity of the trees used by the birds, to avert further electrocution of the hapless birds. This is the most cost effective solution to the new problem.

Conservation Measures :

1. For continued sustenance and conservation of pelicans & storks at Kokre Bellur, some measures have already been suggested. The well-watered tracts, major tanks and river-courses surrounding the village have to be left undisturbed as habitats not only for the pelicans but other waterfowl (Sridhar S. and Srinivasa T.S. 1991. *Endangered Waterfowl of India* p.96, in *Wetland and Waterfowl Conservation in South and West Asia. Proc. International Symposium, Karachi, Pakistan. IWRB Spl Pub No 25*).
2. Mr.A.N. Yellappa Reddy after recent surveys to the area surrounding Kokre Bellur, has pinpointed that Sulekere Tank be declared as protected by the State Government.
3. Selective enhancement of floral elements to counter shrinking of habitat and decline of numbers seem to be an urgent need (Nagulu v. 1995. *Conservation issues of pelicans* p 41 *Avian Conservation in India* (Ed) Lalitha Vijayan, SACON).
4. At the Workshop on Threatened Waterfowl of South West Asia held at Karachi in 1991, it was recommended by the AWB and IWRB to erect artificial nesting platforms on experimental basis (S. Sridhar 1991).
5. The world breeding population of the spot-billed pelicans is probably not more than 2,500 breeding pairs and the total world population is less than 13,000 birds. There is therefore an opportunity for researchers and conservationists in India, Sri Lanka and Cambodia to undertake research and a conservation programme on the spot billed pelican: a prestigious, endangered, yet little known bird species endemic to the Asian continent. (Mangalaraj Johnson, C. Perennou and A.J. Crivelli, *Towards the extinction of the spot billed pelican*. P 92 *Wetland and Waterfowl Conservation in South and West Asia. Proc. International Symposium, Karachi, Pakistan. IWRB Spl Pub No 25*).
6. Local factors such as cutting of trees, hunting, pollution of feeding and foraging zones of pelicans and the need to arrest deterioration of these habitats (*Newsletter for Birdwatchers*, 31:11-12; & 32 :1-2 and Sridhar S. *Waterfowl Census In Karnataka 1987-92; A preliminary Report, IWRB/AWB*).
7. Last but not the least - Kokre Bellur should not be popularised as a tourist spot (S. Sridhar, *Pelicans in Peril*, *Frontline* 9:14, 77-78 July 1992).



Juvenile spot billed pelicans at the open-air enclosure
Photo. S.Sridhar